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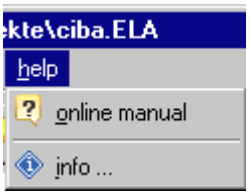
1.1 General comments about working with TRENDOWS-Xp

TRENDOWS-Xp is a programme for collecting data with a wide range of possibilities for its display. Hence, TRENDOWS-Xp is also ideal for showing the individual processes of equipment, single steps or the complete operation of small to medium sized plant.

The centre of TRENDOWS-Xp is formed by the function-integrated building blocks, known as "FiBs". They are used to build the screen showing the progress of the measurement or process, enabling an immediate visualisation to be achieved.

Helptext



1.2 Use of this operating manual

The operating manual for on-line use consists of pages in HTML format. This enables the pages to be read using any browser programme. Choosing "Operating manual" automatically starts the browser programme and shows the page with the contents..

The green column on the left gives suggestions for operation etc. The yellow column on the right shows the appropriate themes and uses.

The top-left and bottom-left lines contain arrow buttons, which will move through the operating manual page by page.

The green arrow buttons at the top of the help window will allow a jump to the pages previously opened.

Similar or relevant themes in the various pages are linked together. The help button in the mask will lead to the relevant passage on the the appropriate page.

1.3 Contact

“Nobody is perfect”! If you have questions or suggestions, then please contact us at the address below.

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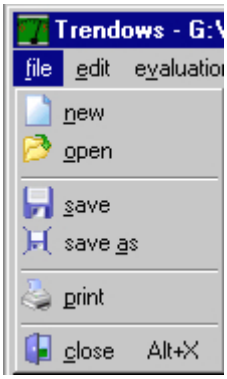
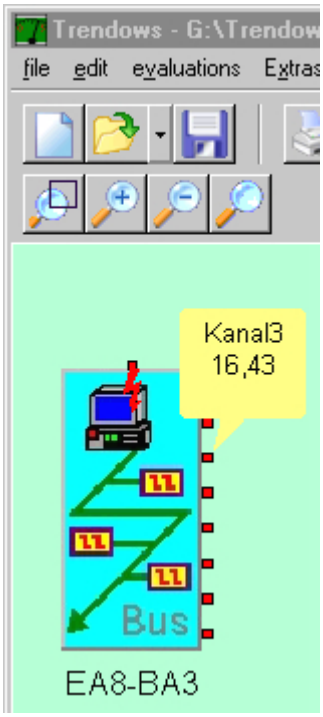
Ellwanger Straße 45
D-71732 Tamm, Germany
Fax: +49 7141 603043

Internet: www.kirsten-controls.de
Email: kirsten@messsoftware.com

Measuring box
MB16-8UIE-THE

Information included:





2.1 Three steps from nothing to a measuring result.

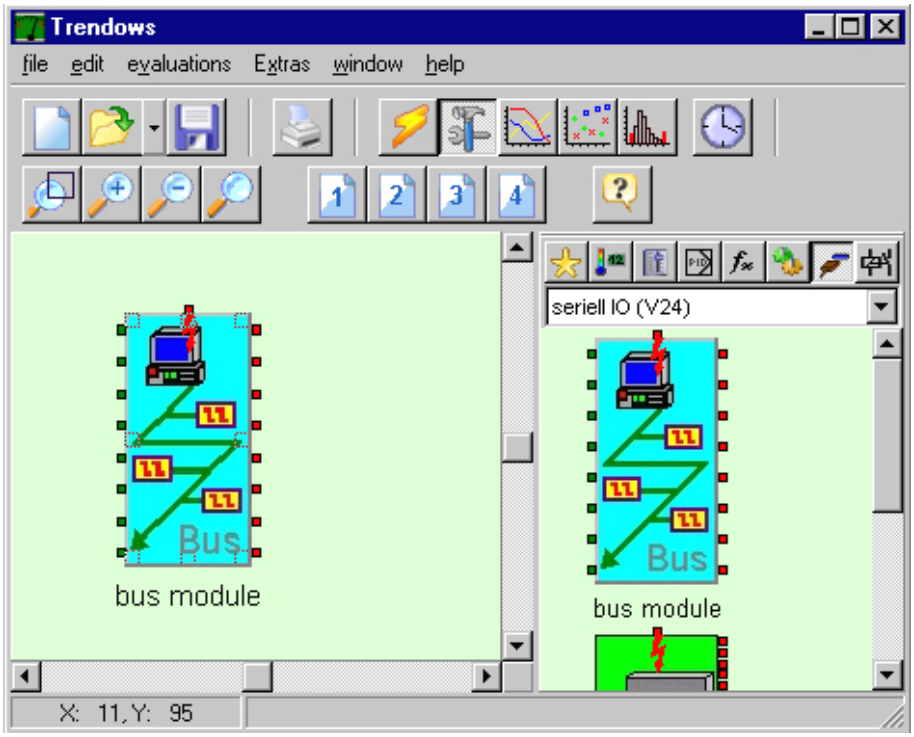
The following three sections explain the system and allow a fast start with the programme. They show how a basic measurement operation can be carried out with minimal effort and the system behind the techniques.

The TRENDOWS-Xp package also contains one application called "BEISPIEL.ELA". Combined with our standardised measuring boxes and modules, this is a ready to use measuring system.

2.2 Define the application

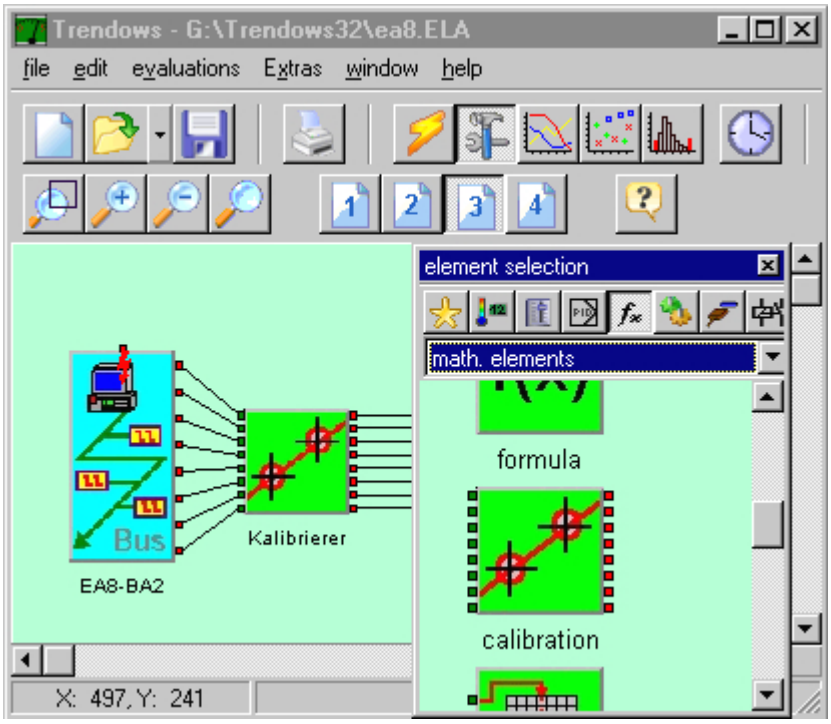
The working folder last used will appear when TRENDOWS-Xp is started. To open a new application, simply press the button marked "new". If you were in process of changing the parameters of the earlier application, then TRENDOWS-Xp will ask if you wish to store your changes.

1. Open the function editor "Edit working folder" and then choose a section for reading in measurement data from the selection window. Here our example is the bus module from the group Serial I/O. Pull this to the foreground.



2. A double click on the picture produces the appropriate menu to set the parameters, where the necessary changes can be made. Suggestions and explanations about these settings can be found in the help sections of the individual pictures. Here is shown the serial input/output.

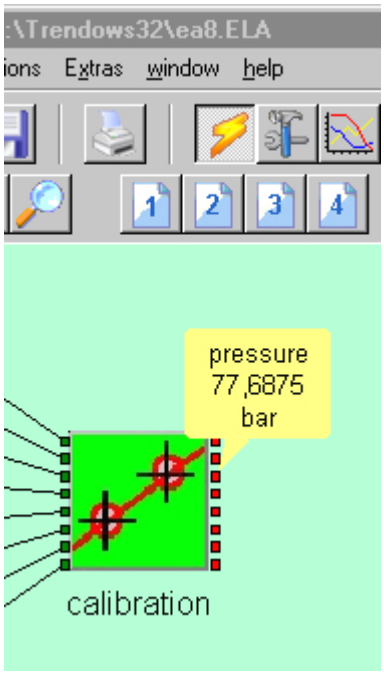
3. Pull the element Calibrator to the screen and connect the input/outputs of the two elements with data-flow lines.



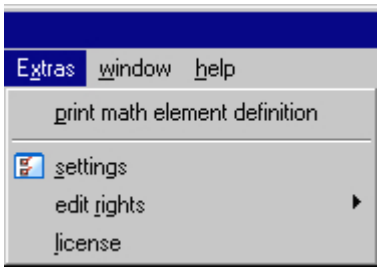
4. A double click on the Calibrator opens the parameter table for the setting of the linear characteristics, here for channel 3.

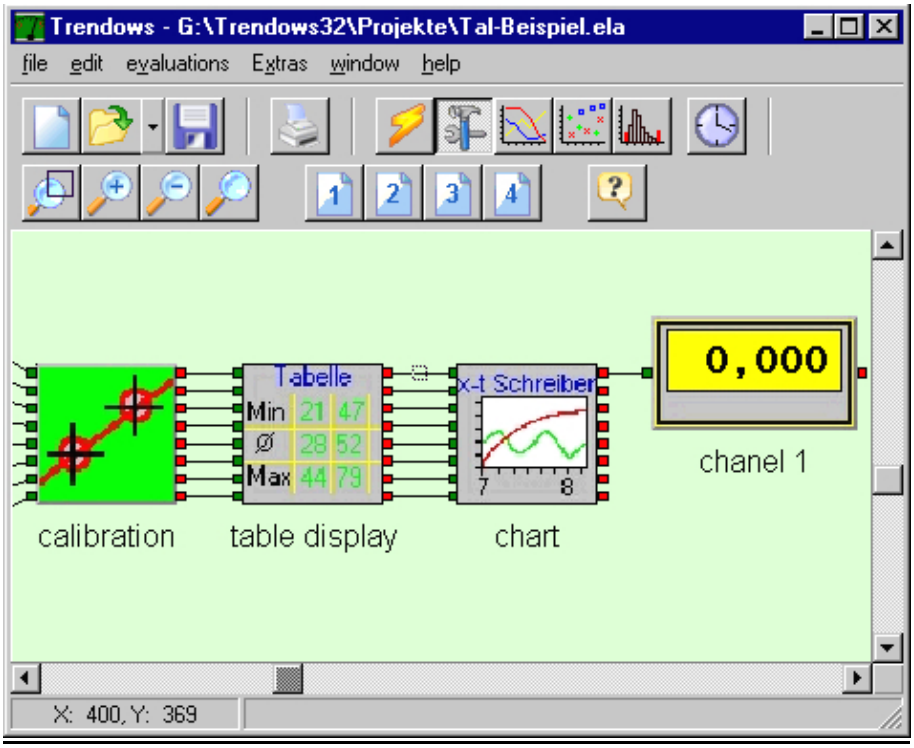
no	output name	unit	IN value 0	OUT value	IN value 1	OUT value
1	Cges	mg/m3	4	0	20	500
2	temperatur	°C	4	0	20	800
3	pressure	bar	4	0	20	100

5. Pull the pictures showing the values to the screen and connect these together using the data-flow lines. Connecting with data-flow lines accepts the name and unit of the channel. The parameter table for the plotter choose the channels to be drawn and set to Y-axis 1 – 3, together with colour and thickness of line. Choose the time scale of the plotter to be shown.



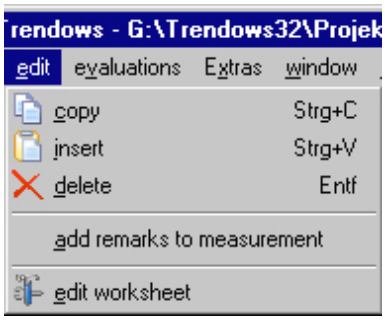
In measuring mode the converted value is shown. Using the characteristic definition:
16,43mA = 77,6875 bar.





6. Use the menu "Extras – Settings" to allocate the memory options.

Entering text



2.3 Measuring

Give your measurement a name!. Using the search function many measurements can be found if all measurements are identified by the name of the work sheet.

Use the "start" button to begin the measurement.

Clicking on the element show table and characteristics will open the appropriate window, showing an overview table and the line characteristics. The decimal places can be changed by clicking on the first digit and pulling this with the mouse left or right.

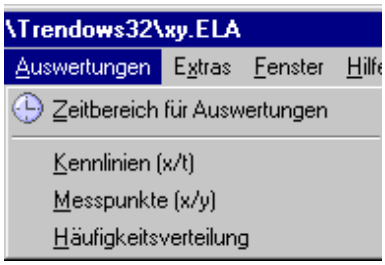
The menu option "edit – measurement notes" can be used to enter comments as a diary of the measurement.

Note:

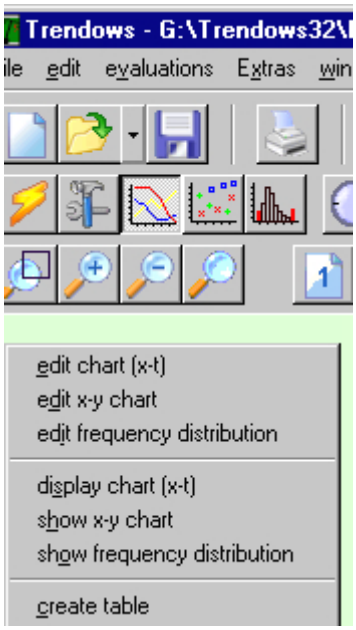
- If the measurement exceeds the present day, then there will be a new data and protocol file for every day.

- A worksheet can be either in measuring or parameter mode. It is not possible to type of worksheet during the measurement.

Analysis functions



List of files and analysis functions, chosen using the buttons in the toolbar.

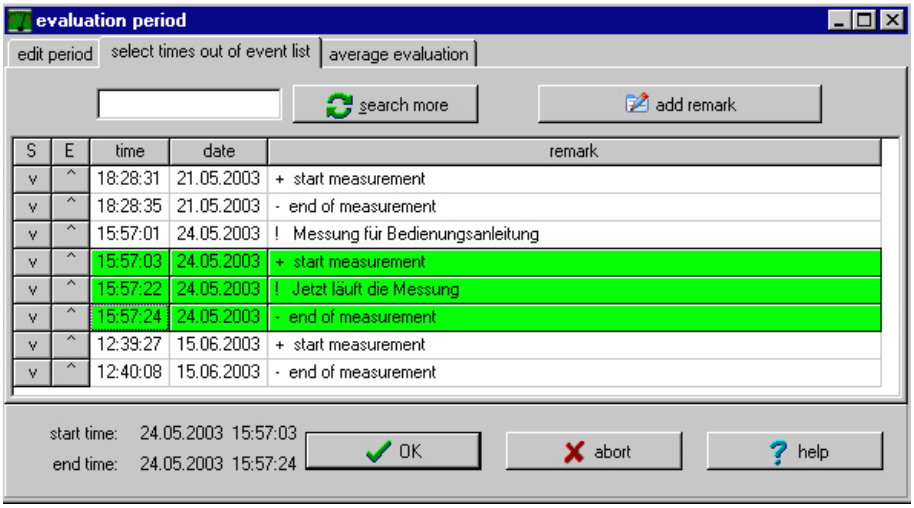


Context menu of the analysis functions after clicking on one of the three buttons and then clicking with the right mouse key on one of the elements.

2.4 Analysis of Measurement

A stored measurement series can be treated using the integrated analysis functions.

The series of measurements stored under the name of the worksheet can be found using the button "Time scale for analysis".



Choose the series of measurements for analysis from the total by clicking on the limiting arrows.

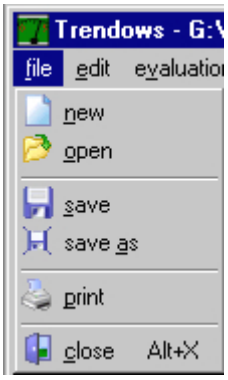
For a graphical analysis click one of the three buttons for the analysis functions and then the element for analysis. A graph with the desired analysis will open. Depending on the analysis function, a change to the scale of the axes or the averaging may be necessary. See definition of analysis functions.

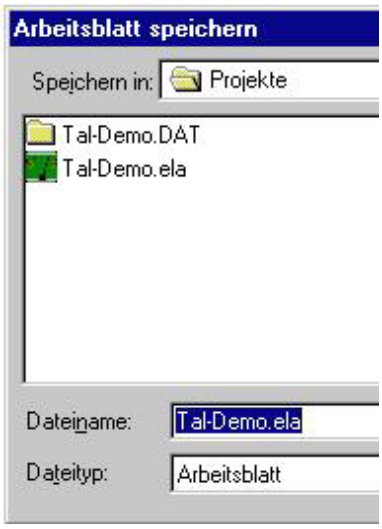
For a tabular analysis click with the right mouse button on the element to be analysed and a menu opens. Choose "Create table". In the input mask that opens, simply click on "OK" without any further entries. This will open EXCEL and the data will appear in an EXCEL worksheet.

Further limits and analyses for tabulat form are described in "Define Analyses".

Menu with:

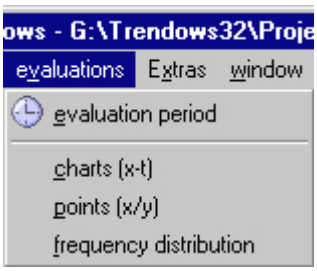
File





The position of the worksheet defines the data file. The data file is created automatically.

Analyses



The menu points in the menu window above are covered by the icons shown adjacent.

3.1 TRENDOWS-Xp toolbar

The toolbar will appear as one or two lines depending on the size of the window for the TRENDOWS-Xp worksheet.

The icons in the first line have the following meanings from left to right:

- Start a new worksheet, "File – new"
- Open an existing worksheet from a directory, "File – open".
- Save a worksheet, "File – save" or "File save as". Clicking the floppy symbol saves the file under the existing name. Using File – save as allows a new name to be defined.

- Print the worksheet, "File – print".

- Start the worksheet in measuring mode.

- Define a worksheet, change parameters of elements.
  "Edit – edit worksheet".
- Analysis of characteristic X against time for the elements.
  "Analysis – characteristics (x/t)".
- Analysis of characteristics X against Y for the elements.
  "Analysis - measuring points (x/y)".
- Time dependence of the elements
  "Analysis of time dependence"

- Choice of measurement series for analysis,

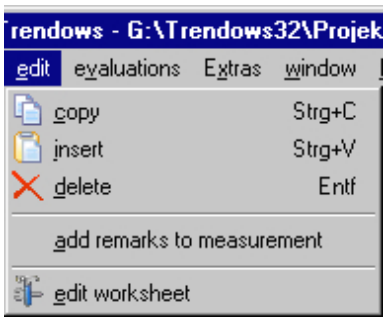
The icons in the second line have the following meanings from left to right:

- Mark view,
- Increase view,
- Reduce view,
- Show whole view,

- View 1,
- View 2,
- View 3,
- View 4,

- Help text

Edit



3.2 Edit functions

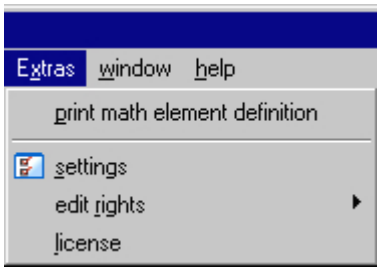
The commands "copy", "insert", and "delete" apply to an element or group of elements as described in General Information about elements.

The option "Edit – measurement notes" enables text explanations to be included during a measurement. These are automatically stored at the same time. When printing a tabular analysis these can be automatically printed at the same time.

The option "Edit worksheet" changes to parameter mode and the window for the choice of elements opens. All functions for the definition of a worksheet are activated.

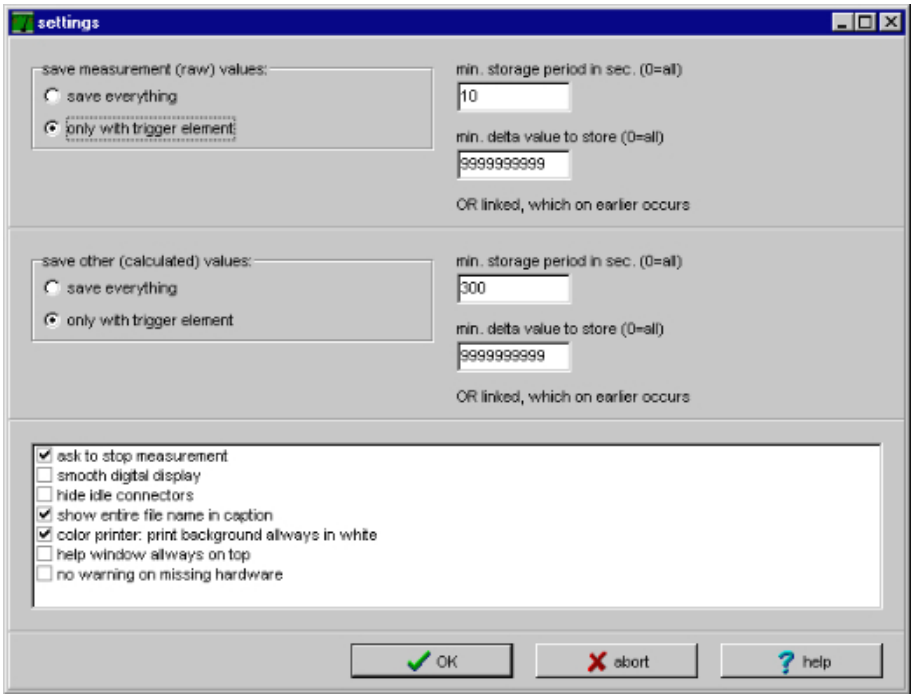
Note:
A worksheet can be in either measuring or parameter mode. It is not possible to change the characteristics of a worksheet during measurement.

Extras



3.3 Storing data

In "Extras – settings" the following mask is available to change the store options and some system functions.



The elements are defined internally as:

- Elements for gathering data under "Storing measuring data/raw data" and
- Elements for analysing and showing data under "Storing all other (calculated) values".

Each group can be set to a different store mode:

- a maximum allowable change of value before the store function is initialised, or

- a period of time, after which the store function is initialised.

The change of value is an absolute setting and applies to all elements in the group. If the value 1 is set, for example, then this can mean, depending on the units within the elements, 1k, 1ppm, 1kg etc.

Data is stored in a daily file. A protocol file is kept at the same time, keeping a time protocol of the measurement. The protocol file also includes the notes with exact time. Both files are stored in a separate directory with the same name as the worksheet. This directory is created automatically. The directory is created one layer deeper than the worksheet in the path.

Note:

- In a fixed period of time data will only be stored if there has been a change of value in that time.

- Any measurement files from a series of measurements can be chosen together for analysis.

- Storing after trigger, see "Trigger element".

3.4 System functions:

- "Confirm end of measurement" shows a window asking for confirmation of the end of a measurement.

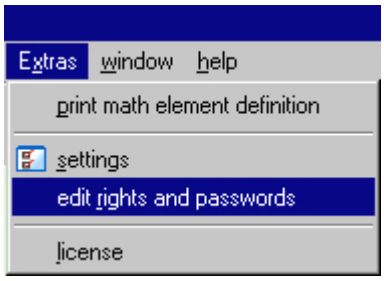
- "Slow digital display" refreshes the value every 0.5 seconds. This function has no influence on the storing of measurement data.

"Hide connections" does not show the unused connections or the ones using an unsichtbaren Datenflusslinie (invisible data connection).

- "Complete path in the name" shows the full path in the top line of the worksheet window.

- "Print background white" applies to colour printers when the worksheet has a coloured background.

Rights and Passwords

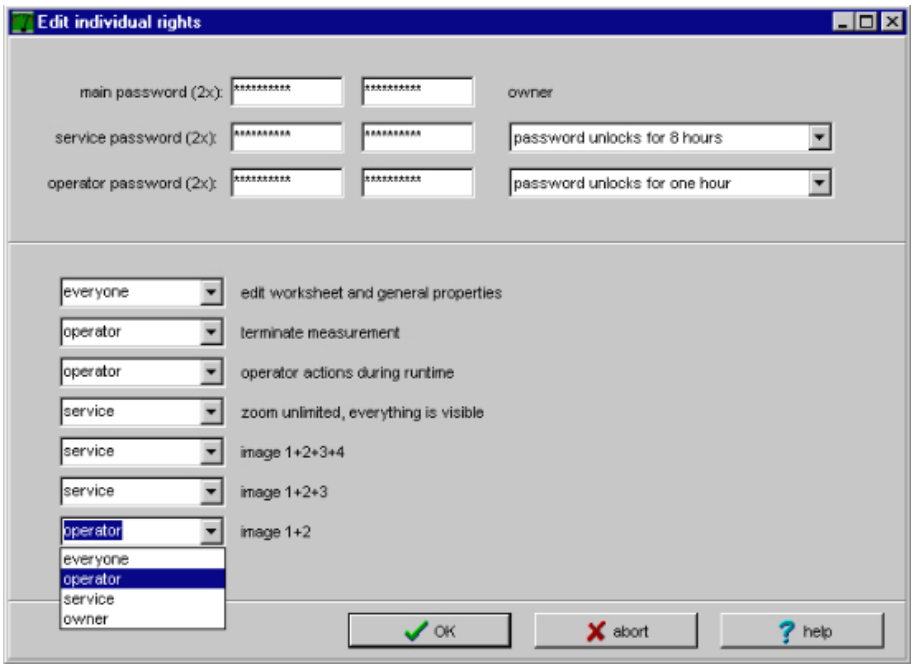


3.5 Data rights and assigning rights

The worksheet can be protected against changes on various levels. This allows different rights to be assigned to the operator, service personnel and third parties if required. The following levels exist, in order of priority:

- Owner
- Service
- Operator
- Everybody

Owner is generally the creator of the worksheet, and has the most rights. Only somebody with these rights can set the other rights and assign passwords.



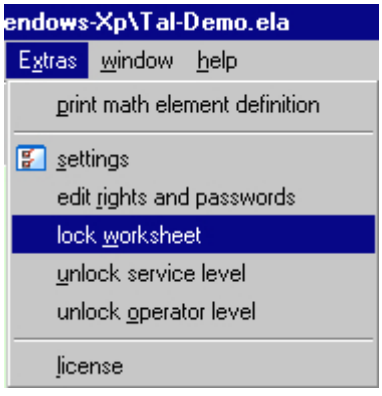
The service level is meant for service personnel, who require to be able to change some of the parameters of the FiBs, when they carry out calibration, for instance.

The operator level will usually allow data to be entered to the system.

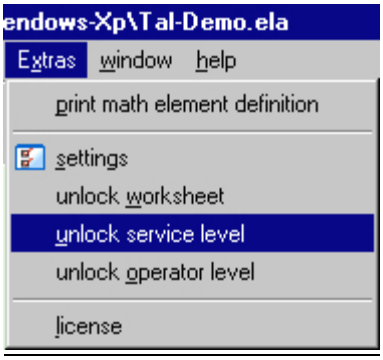
The level "everybody" will not require a password.

The password is set in the upper part of the mask. For security reasons every password must be entered twice. There is a field behind the operator and service passwords to allow the maximum time of use to be set. This should prevent the application being accidentally left open.

For the four levels, three different functions can be selected from four different views. One of the entry levels can be chosen for each function and view.



Rights menu for changing passwords and assigning rights.



After entering data the function "lock worksheet" should be clicked, locking the lower levels. This will then protect the worksheet. A function can be unlocked by opening the menu "extras" and choosing the desired level. After the password has been accepted, this level is open.

Note:

The higher levels automatically have access to the possibilities of the lower levels.

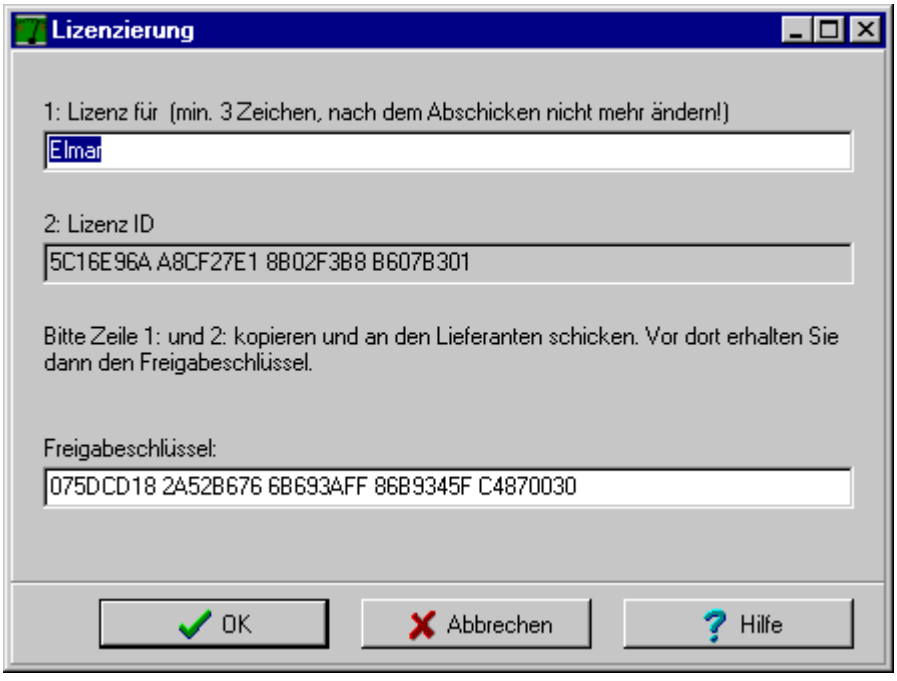
3.6 Licensing of TRENDOWS-Xp

- Start TRENDOWS-Xp
Until TRENDOWS-Xp has been licensed it can only be used for 30 minutes after start without limitations.

- Go to Extras - Licence

- Mark the code number in the second line, click the right mouse key and click copy.

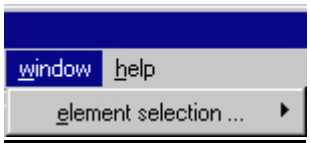
- Send us an email at kirsten@messsoftware.com, showing the code combination in the text.

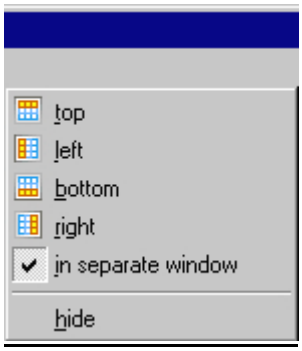

Lizenzierung
1: Lizenz für (min. 3 Zeichen, nach dem Abschicken nicht mehr ändern!)
Elmar
2: Lizenz ID
5C16E96A A8CF27E1 8B02F3B8 B607B301
Bitte Zeile 1: und 2: kopieren und an den Lieferanten schicken. Vor dort erhalten Sie dann den Freigabeschlüssel.
Freigabeschlüssel:
075DCD18 2A52B676 6B693AFF 86B9345F C4870030
OK
Abbrechen
Hilfe

- An answer email will be sent containing a code key, which should be copied into the third line on the licence screen.

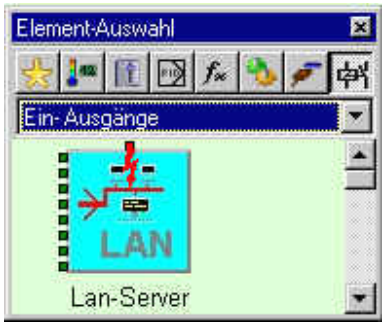
- Enter the name received from us in the upper line of the screen.

Window for display elements



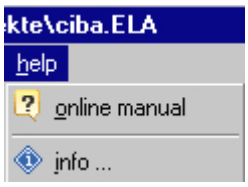


with submenus for positioning



Window for element selection

Help



3.7 Library of display elements with selection window

Clicking on parameter mode will open a window with the display elements. As standard this list is shown on the right of the window.. Should it be preferable to place this list in another position, then one of the position buttons should be used.

If the choice "separate window" is made, then the element window will appear within the screen and can be changed like any other window. The following selection options are available:

- all elements

- display elements

- input elements

- control elements

- arithmetic elements

- function elements

- communication elements for serial data transmission

- Network input/output elements

The function "Hide" closes the element window.

Path

4.1 Analysis of measurement results

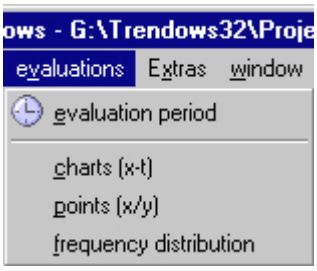
The analysis of the measurement results is only possible after the end of the measurement, so long as TRENDOWS-Xp is open once. If TRENDOWS-Xp is running permanently then the existing data files can be analysed by opening the programme a second time. In the first line of the window will be a warning (read only).

if TRENDOWS_Xp is opened a second time

Analysis functions:

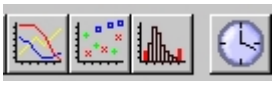
A stored series of measurements can be analysed using the integrated functions. The following analysis functions are available.

- graphical display of results against time x/t diagram,
- graphical display of results from one or more channels against the result of another channel, x/y diagram,
- time dependence of the results of a channel,
- tabular display and integration of the results in an EXCEL worksheet.



These analysis functions apply to all elements. This means any of the four analyses can be called for each element.

List of measurements and analysis functions in the toolbar:

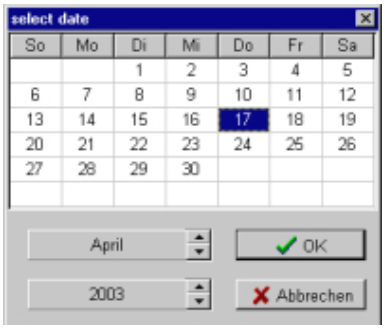


Important:
The signals at the inputs are evaluated by each element. The element reading the data and the input data can hence be evaluated by connecting a further element. This then puts the signals from the outputs of the first element in connection with the inputs of the following element.

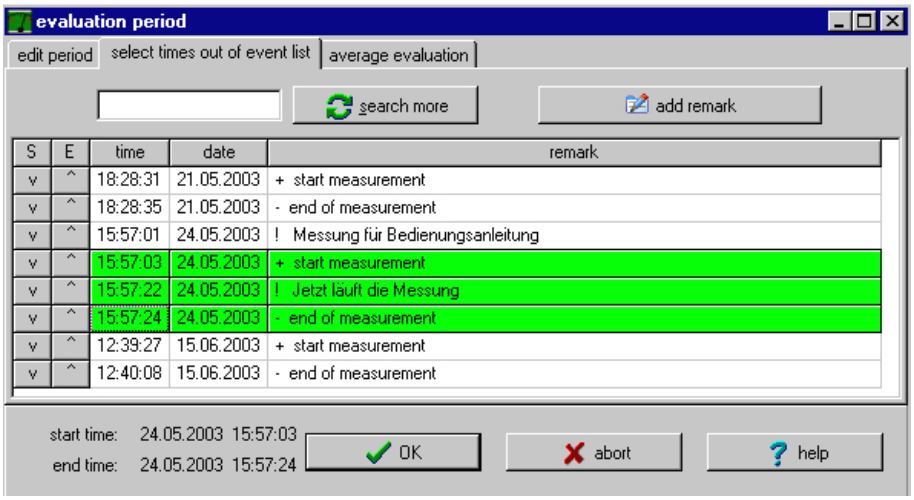
4.2 Choose measuring series

All series of measurements stored under the name of the worksheet are shown in a table of measurements. Clicking the button "Time range for results" opens this selection. There are three different selection methods available as choice and definition mask.

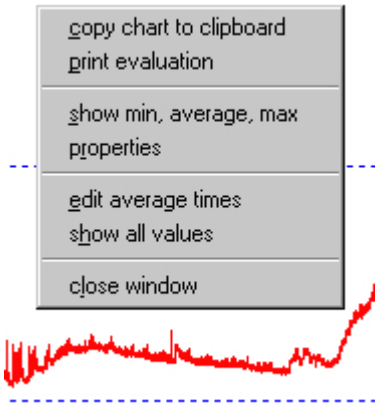
- "Enter times" gives a quick choice or a defined time segment.
- "Choice from measurement list" allows specific measurements to be chosen.
- "Averages for analysis"



Calendar function for choosing a time range.


evaluation period
edit period
select times out of event list
average evaluation
search more
add remark
S E time date remark
v ^ 18:28:31 21.05.2003 + start measurement
v ^ 18:28:35 21.05.2003 - end of measurement
v ^ 15:57:01 24.05.2003 ! Messung für Bedienungsanleitung
v ^ 15:57:03 24.05.2003 + start measurement
v ^ 15:57:22 24.05.2003 ! Jetzt läuft die Messung
v ^ 15:57:24 24.05.2003 - end of measurement
v ^ 12:39:27 15.06.2003 + start measurement
v ^ 12:40:08 15.06.2003 - end of measurement
start time: 24.05.2003 15:57:03
end time: 24.05.2003 15:57:24
OK
abort
help

Graphic menu



The measurement series for analysis are chosen from the measurement table. Clicking the arrow symbols in the two left columns allows a limit to the series to be set. The measurement series inside the limits are automatically marked green.

Under "Choose times" there is a final option containing several time criteria for an easy choice via mouse click. There is also an option allowing measurement series to be found using time definitions with calendar function.

4.3 Result of analysis

Once the measurement series have been chosen a mouse click on the icon for the analysis function and a second mouse click on the element to be analysed will open one of the three graphical analyses. A window with the chosen graphics will appear. Clicking the right mouse key within the graphics will open a menu for the following functions:

- copy the graphics to the paste board for further Windows applications,

- print analysis,

- Show min, max. and average. If this function is activated then the minimum, average and maximum values of the time scale will be shown on the right hand side.

- Settings opens the parameter mask, allowing the analysis of the measurement values to be changed, see section Graphical Analysis.

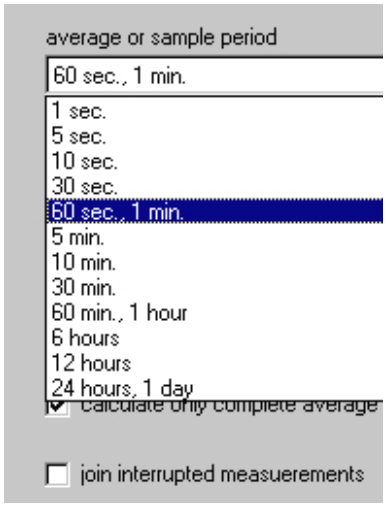
- times for averaging allows the times to be chosen manually.

- show all values returns to a display of all the results.

Zoom

By clicking and holding the left mouse key it is possible to define a rectangle for magnified view of a section. The minimum, average and maximum values are now shown for the magnified section. Clicking on the graphic returns to the previous view.

Analysis times

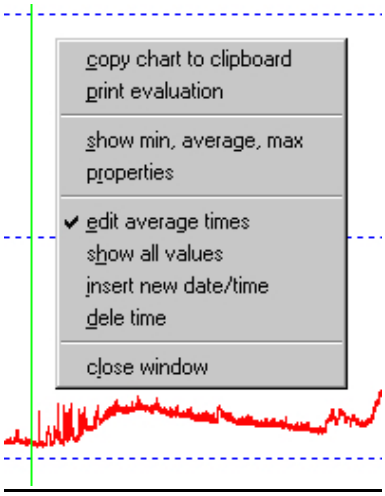


4.4 Define analysis interval

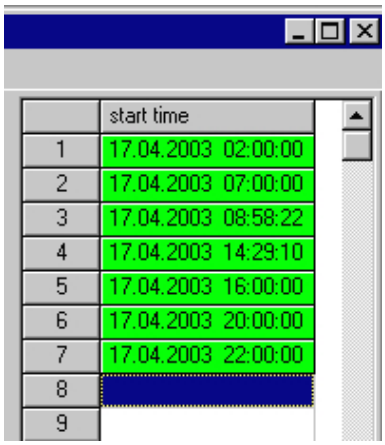
Analyses are often not required over the total time of measurement, rather to set times or at set intervals. TRENDOWS-Xp offers several possibilities for the definition of the interval.

- Fixed interval from the start of a measurement

- Fixed interval from the start of a full hour or minute.



Menu from the graphics



List for addition of individual times

- Interval, at individual times from the list shown.

The fixed analysis intervals can be chosen from the list in the window.

The individual times can be entered manually in the list or chosen from a graphic display. To do this a characteristic curve is opened. Clicking the right mouse key opens a menu including the option "edit times for averaging". A second click with the right mouse key on the chosen time opens a new menu. From this menu choose the option "add new time". The characteristic curve will now show a perpendicular to the time axis. Pressing and holding the left mouse key allows the line to be moved left and right. Further clicks on the right mouse key allow other times to be added. The times are added to the list in the parameter mask under "Averages for analysis".

The times in the list can be edited by double-clicking or erased by pressing the right mouse key.

Important!

- The times or intervals set apply both to averaging and sampling.

- The intervals apply for all analysis functions and elements.

- The averaging defined applies to both graphics and tabular display.

- The choice raw data from the list of time intervals shows all values and uses them as well.

4.5 Parameters of graphical analysis

The graphical analysis of a particular element can require new parameters. This can be achieved using the context menu which opens when the button for the analysis function is pressed and the appropriate element is clicked using the right mouse key.

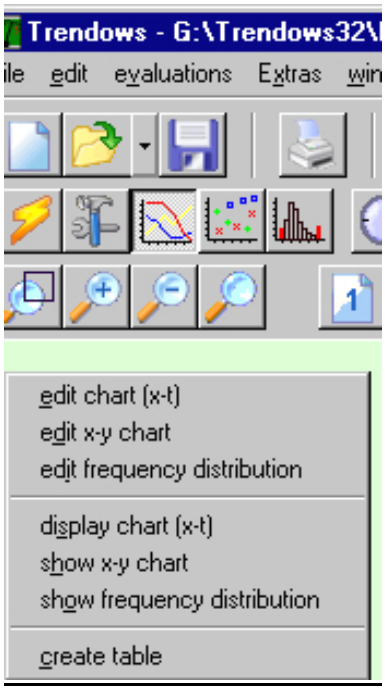
4.5.1 Set parameters of a x/t characteristic curve, with:

- two titles,

- selection of input channel to one to three Y-axes,

- set type, thickness and colour of line,
- add the name and unit of the variable to the chosen Y-axis,

- automatic or manual scaling of the Y-axis.



Context menu for the analysis function. Click on one of the three buttons and then wit hthe right mouse key on one of the elements.

4.5.2 Set parameters of y/x curve, with:

- two titles,
- selection of input channel for the X-axis,
- selection of input channels for one to three Y-axes,
- set type, thickness and colour of the lines,

4.5.3 Parameters of frequency, with:

- two titles,
- selection of an input channel for the X-axis,
- bandwidth for the variable (width of bar),
- Automatic or manual scaling for the X-axis or measuring range.

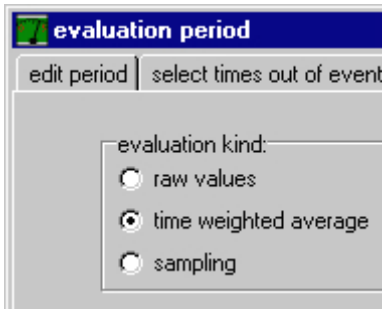
The frequency distribution of a variable is the percentage frequency of falling within a given bandwidth (range) as a bar chart. Values falling outside this range are shown collectively for above and below the range as two single bars.

4.6 Define output table for EXCEL

The measurement values can be shown as a table using EXCEL. This ensures that all EXCEL functions are then available for a further treatment of the results. The results are passed automatically to an EXCEL worksheet using the paste board, without any further manual operations being necessary.

For tabular analysis click with the right mouse key on the element to ba analysed and choose "create table" from the context menu. One of the three buttons for graphical analysis must have been pressed beforehand. An input mask opens allowing the output to the table to be defined.

Tabular functions



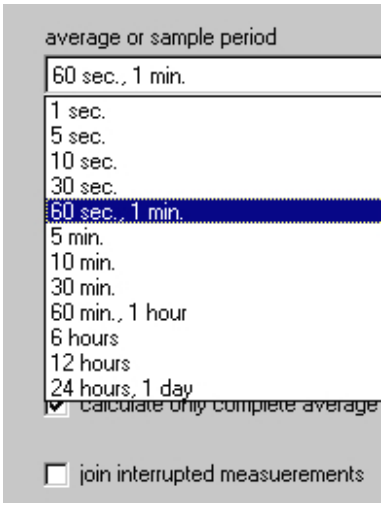
4.6.1 Parameters for tabular output with:

- Use and placing of the measurement notes,

- No lines without change of value. Since it is possible to store results at set intervals, it is possible that identical values can be repeated. Here is the possibility of removing lines without identical content.

- "Choose analysis time" opens the choice of measuring series with three variants. Long-term measurements produce large quantities of data which necessarily lead to confusing tables. It is therefore sensible to concentrate the quantity of data. Here is from the variant "averages for analysis"

- timed averge, or
- sampling



Choice of time interval

The best choice. Sampling shows the value at the begin of each interval, or at set times in the list.

- if desired, deactivate the automatic start of EXCEL,

- Give the cell position in the EXCEL worksheet for the insertion of the table. The data are transferred by channel, starting with 1:n in EXCEL column 1:n. The first row will contain the name of the channels, the second row the unit and the data will be transferred from the third row.

- Name and path for an existing EXCEL worksheet.

The transfer to EXCEL uses the "preparation-makro" and the "analysis-makro" to search. This makro is automatically started if it is present. This can be used for example to delete the contents of the cells before copying (preparation-makro) or for the format of the data (analysis-makro). This produces a tabular presentation of an element automatically.

4.6.2 Parameters of averaging with:

- choice of averaging time. If raw data is used then the values present will be inserted,

- start time for the averaging, whether the averaging to a set time scale or from the start of the measurement itself.

Example: 1/2 hour average according to fixed time scale starting at hh:00 and hh:30.
If the measurement starts at hh:17, then the averaging will start for "averaging from start of measurement" at hh:17 and hh:47.

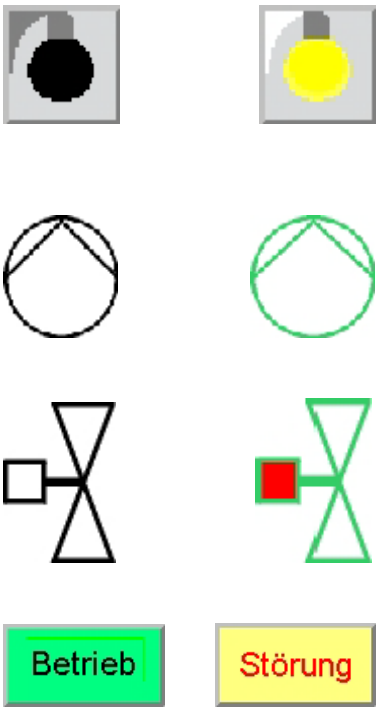
- analyse complete averaging intervals means that the period for the averaging must be complete. Hence there is no need for a start and end time.

- connect interrupted measurements means that with a graphical display of the curve, any missing "pieces" will be replaced by a straight line.

Note:
The time based averaging in TRENDOWS-Xp is carried out by the adding of all partial areas, divided by the interval.

Element status display when:

Off On



5.0.1 General information about the function-integrated block-elements (FiBs)

A block-element in TRENDOWS-Xp contains several properties in order to simplify the construction of a measuring system. These properties are:

- prepared optical appearance for ease of visualisation. Can be replaced by pictures in JPG format,

- variable size of the FiB,

- integrated menu for parameters,

- storing of input data,

- analysis of the data from every FiB as curve, table and frequency distribution.

There are different types of FiB according to function, and they are described separately in detail below:

- display elements to show values and status,

- input elements for defining values,

- functional elements for carrying out control and regulatory functions,

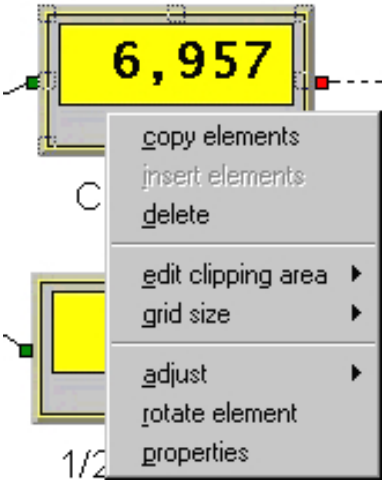
- mathematical elements for treatment and calculation of values

- serial input/output for measuring instruments and bus modules,

- network elements for input/output in networks.

5.0.2 Parameters and editing of the FiBs

Menu for the FiBs



There is a context menu for every FiB allowing configuration and editing of functions. A click on the right mouse key opens this menu.

- A FiB can be copied and added separately or as one of a group. They can also be added to another worksheet. A group of FiBs is formed during editing by holding the left mouse key and drawing a frame around the FiBs.

- Deleting of FiBs. Erasing can be reversed in edit mode.

- A group of FiBs is assigned to one of the 4 monitors using "Define section". Click the button "Zoom area" and then hold the left mouse key to draw a frame around the FiBs. It is helpful to place the FiBs separately in a group on the screen before carrying out this operation. The section can then be defined.

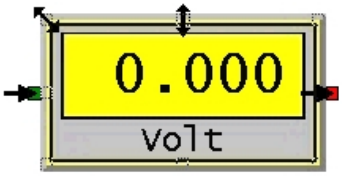
- A grid from fine (1x1) to coarse (64x64) can be defined for the movement and change of size of FiBs. It is not an advantage to set the grid too fine.

- The arrange function allows a group of FiBs to be arranged in a straight line and at the same size. There are several settings available. This is carried out in edit mode by holding the left mouse key and drawing a frame around the FiBs.

- Rotate function for FiBs. 90° for each click of the mouse.

- Properties opens the mask for configuration of the parameters. This can also be opened by a double click on the FiB with the left mouse key.

Directional arrows



digital display

5.0.3 Changing size, position and direction of the FiBs

The size of all FiBs can be changed in two dimensions.

In edit mode there are markers at the corners and in the middle of the sides. If the cursor is placed over these markers, then a double arrow appears. Holding the left mouse key pressed and pulling with the mouse will change the size of the icon.

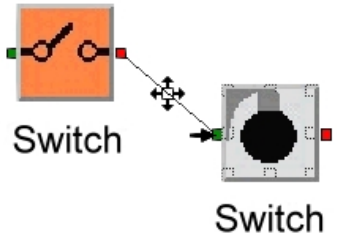
- two dimensionally at the corners,
- in the direction of the arrow in the centre of the sides.

Should a single arrow appear on the left or right side, then pulling with the mouse will activate a data-flow line. Gentle movement of the mouse will produce the double arrow.

Clicking and holding the left mouse key on the FiB allows it to be pulled to any point. This is limited by the size of the window.

The surface of every FiB can be rotated using the menu in 90° steps. The connection points will not move. Digital and analogue displays will not rotate.

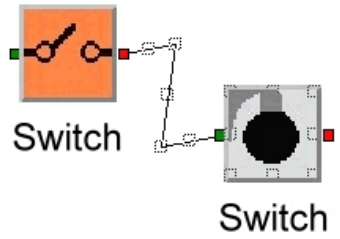
Data-flow line with arrow and movement indicator



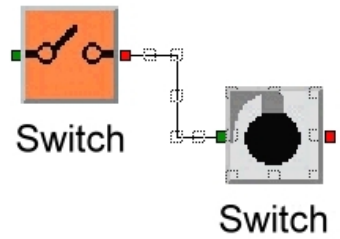
Connect by pulling from output to input

5.0.4 Draw data-flow line

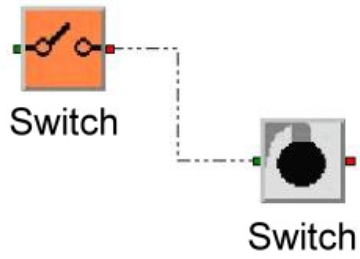
If the cursor is placed on an input or output in edit mode, then a black arrow will appear. When pulled with the mouse a data-flow line will be added or removed. Clicking on an existing data-flow line will mark it and produce a small rectangle in the middle of the line. If the cursor is placed on this rectangle, four arrows appear showing how the line may be moved.



Bending a data-flow line for right-angled appearance



Automatic right-angle



Invisible data-flow line

Pulling of a data-flow line is only possible from an output to an input. Place the cursor on the output, press and hold the left mouse key and pull to the appropriate input. Pulling a data-flow line from one FiB to another will automatically transfer the name of the output channel to the input channel.

A data-flow line can be removed from a connection. Mark the data-flow line with the mouse. Place the cursor on the connection point when the black arrow appears and pull the line to another input.

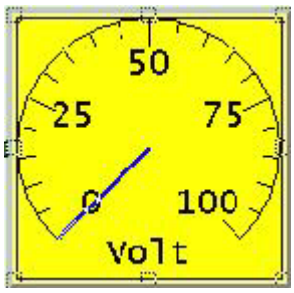
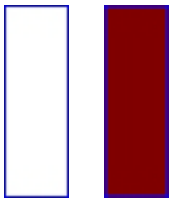
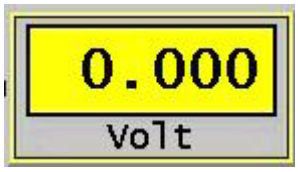
The data-flow line can be bent by placing the cursor on the rectangle in the middle of the line and pulling as desired when the arrows appear.. The centre of each section and the bends are marked for further movement. A perfectly right-angled bend can also be achieved automatically after rough positioning using the function "Set right-angles" from the context menu.

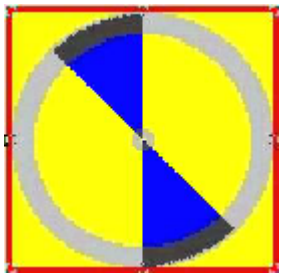
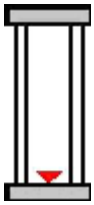
FiBs with multiple inputs/outputs can be connected together by simply making one connection and then applying the function "Make parallel connections" to the other inputs/outputs.

Note:
The data-flow lines can also be made invisible by choosing the invisible line (first type in the choice window). The line will remain invisible independent of background colour. An invisible line is shown as grey dots when editing.

The connection points for the inputs and outputs can be switched off using "Extras – settings" from the menu. This makes them invisible. In order to keep the connections clear, only the unused connection points and those attached to an invisible line can be made invisible.

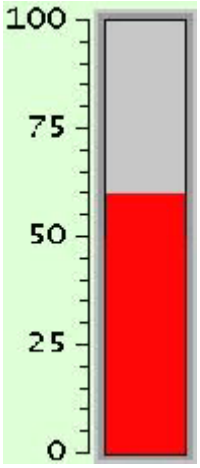
5.1 Display elements

Function	Parameters
Analogue display	
 The element shows the input value on an analogue instrument. Here is the traditional view. Several varieties of analogue instrument with 4 different background colours are available in the element library.	- name of the value shown, if not identical to previous. - minimum and maximum values for the scale. - appearance as round instrument. This requires the symbol to be replaced. See directory ANALOG.JPG.
Bar diagram	
 The element shows a variable height proportional to the input value. Often used for tank contents etc. May be combined with the element "Bar chart axis".	- name of the value shown, if not identical to previous. - minimum and maximum values for the scale.
Pictures	
 The element produces a picture from a defined list of max. 50 pictures. The lower margin of the element has a control input. Dependent on the value (1 – 50), the appropriate picture from the list will appear.	- name of the element - retain proportions Tabular form: - use right mouse key to load picture per line, - name of the chosen picture
Digital display	
 The element shows the input variable as digital value. Several varieties of digital display with 4 different background colours are available in the element library.	- name of the value shown, if not identical to previous. **Note:** The number of decimal places can be changed during a measurement by clicking on the first digit with the left mouse key and pulling it left or right.

	Function	Parameters
Rotating display 	The element displays rotary motion. The speed is proportional to the input value. The element is designed to represent rotation.	- name of the value shown, if not identical to previous. - Minimum and maximum values for the rotational speed. The display is limited by refresh speed of the display and the measuring speed of TRENDOWS-Xp.
Display for flow-rate 	The element displays a float at a height dependent on the input value.	- name of the value shown, if not identical to previous. - minimum and maximum values for the scale.
On/off display Off On	The element shows the switching status	- name of the value shown, if not identical to previous. Status: off, value < 0.5 Status: on, value > 0.5
Document display Opens a document on the screen after a mouse click Has opened a document in response to an input signal	The element opens HTML, PDF or DOC pages in response to a mouse click or control signal. Can be used to show information for operation, comments about a malfunction etc. The pages can be stored locally on the PC, on the intranet or on the internet The pages may appear singly and manually through clicking the mouse or controlled by a value on the input to open a particular page.	- name of the element and input variable. - address of the memory location of the HTML pages. The address may be a local path, path: G:\Infos\Start.htm or on the internet: http://www.messsoftware.com/ Start.htm The example above will open the page Start.htm when the input value is larger than 0.5.

	Function	Parameters
	The pages to be called automatically must be stored with an identifying code as a web or local path address.	Introducing an identifying code in the name of a HTML page allows it to be called automatically. The code is defined by the spacer symbol $ in the name, E.g. Start$$.htm. The address must contain the HTML pages with the name Startxy.htm (xy is 00 to 99). **Example:** Calling the page "start11.htm". Path is: G:\infos\start$$.htm Input signal: 11 **Note:** The number of digits and spacers must be identical.

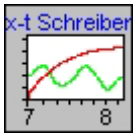
Column display



The element shows a column height proportional to the input value. The colours cannot be changed. May be combined with the element "bar chart axis" to easily create bar charts.

- name of the value shown, if not identical to previous.

- minimum and maximum values for the scale.

	Function	Parameters
x/t plotter 	The element shows the values on the input channels as a graph against time during the measurement. Up to 8 channels can be assigned to one plotter. There is no limit to the number of plotters on the display. **Note**: During long-term measurements it is practical to use several plotters in parallel, set to different time-scales. A click wit the left mouse key on the element during the measurement will open a window containing the graph.	- name of the element, - time range to be shown during the measurement, - The channels can be assigned to between 1 and 3 Y-axes, - thickness and type of line, - trace colour, - scale and name of the 3 Y-axes with units.
x/y plotter	The element shows the values on the input channels against one other input channel during the measurement (x/y diagram). The values appear as symbols in the diagram. It is not possible to draw a line between the points in measurement mode. A click wit the left mouse key on the element during the measurement will open a window containing the graph.	- name of the element, - the channels can be assigned to between 1 and 3 Y-axes. One channel is chosen as X-axis, - thickness and type of line, - trace colour, - scale and name of the X-axis with units, - scale and name of the 3 Y-axes with units.
Tabular display	The element shows the values of the input channels as a table for reading at a glance.	- name of the element, - number of inputs, max. 128 - averaging time, - decimal places shown.

Function	Parameters

The table shows:

- current value

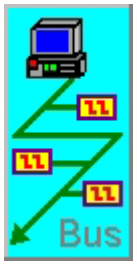
- the average value for a chosen time,

- the minimum and maximum values since the last reset.

A click on the left mouse key on the element during a measurement opens a window with the table. A click with the right mouse key on the table will open the menu to reset the maximum and minimum values.

Function	Parameters

5.2.1 Bus modules



The element reads measuring signals from bus modules and bus-enabled instruments:

- TRENDbus modules,

- sensor modules of type ISM, IDM,

- Data-logger IDL100/IDL101 in on-line mode

- modules of type e.bloxx

- setting of the module address (bus address)

- choice of module type

- in module setting choice of measuring range if the module or instrument has several possible ranges.

For types ISM, IDM, IDL and e.bloxx the number of channels must agree with the configuration of the modules, see configuration software ICP100. When defining the channels care must be taken with the number format. Not all formats that can be chosen in the ICP100 software are possible. Here are some format examples:

ISM101, Setting (4), define as 8 word inputs.

IDM118, Setting (4) define status/output for Boolean logic.
- status field as 1 word input/output and in ICP100 as integer format.

- define counter channels for real values

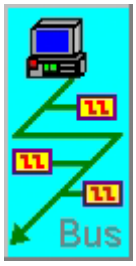
ISM 110, 111, 112, setting (4) define
- analogue inputs/outputs as real values,

- counter channels as real values,
- status inputs/outputs as Boolean values.

IDL100/101, setting (6), define
- analogue inputs as real value
- digital status inputs as number of words, in ICP100 as Boolean value,

- digital status outputs as Boolean value.

Function	Parameters

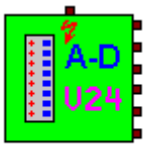


e.bloxx: only real values are valid! The module must be removed briefly from the voltage supply after a change of baud rate.

RS232-interface settings:
- TRENDbus-Module,
  ISM110 - ISM112,
  IDM, IDL up to max. 19.2 kB
- ISM101 up to 38.4 kB
- e.bloxx up to 115.2 kB

Note:
e.bloxx modules may only be used with the format 8, e, 1!

5.2.2 Measuring instruments with RS232 interface



AD - V24

The element reads signals from measuring instruments using the RS232 interface. Each type of measuring instrument has a different communication protocol, designed by the manufacturer according to the function and properties of the instrument. TRENDOWS-Xp requires driver software to use the communication protocol. Please ask us if you require to use an existing measuring instrument TRENDOWS-Xp presently contains drivers for the following instruments:

- Airtox Gasphotometer
- Almemo instruments f. Ahlborn
- ASCII data by column
- Brüel & Kjear 2260 (noise meter)
- MSI 5600, flue gas analyser
- MSI 2500, flue gas analyser
- MSI 150, flue gas analyser
- MSI compact, flue gas analyser
- PA4400A, elec. power analyser
- Siemens Piezograph2, plotter

- name of the element,

- unit, valid for all channels,

- number of output channels,

- choice of measuring instrument.

If the channels have different names and units the FiB "calibrator" must be used to allow the channels to be defined separately.

RS232-interface settings:
- Airtox: 9600, 8, n, 1
- Almemo, 9600, 8, n, 1
- PA4400A, 9600, 8, n, 2, HW

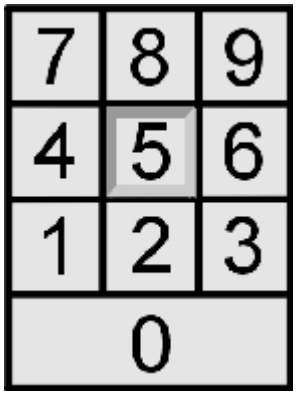
ASCII data by column
Using this setting the element will read in data that are sent by an instrument:
- continuously,
- line by line,
- data with field sparator

Valid field separators are , ; : and tabulator.

5.3 Input elements for preset values

Function	Parameters

Pictures



Production of the value 5 with a click on the number 5.

With this element it is possible to define an output value to be set when the picture is clicked with the mouse. For example, a picture of a lamp can be used to produce a value that will switch on a lamp.

Up to 50 positions can be defined within a picture, allowing a value from 1 to 50 to be produced. A position is a rectangular fraction of the picture, defined by the x and y coordinates of the two corners.

A picture can be assigned to each position, appearing when the position is clicked.

- name of output value,

- unit of output value,

- preserve proportions,

Tabular form:

- load picture line by line using the right mouse key,

Each of the following lines defines a fractional area, defined by the position in percentage of the total area, starting from the upper left-hand corner of the picture (x=0, y=0).

- x0 and x1 positions in percentage of the width.

- y0 and y1 positions in percentage of the height.

Example:
The keyboard shown on the left is divided into 3 columns and 4 rows with equal intervals. The 5 hence has an area of:

x0=34%, x1=66%,
y0=26%, y1=50%

This definition is put in the fifth line in order to produce the value 5. For the value 5 the picture showing a keyboard with the 5 depressed is loaded.

	Function	Parameters

Switch

4-way toggle switch

switch

3-way toggle switch (right)

3-way toggle switch (left)

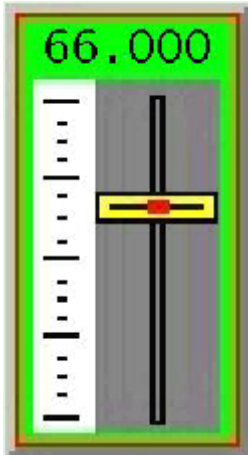
The elements are used to switch the data flow or a digital output. The elements have two different states, expressed by a number at the output:

- 0 for passive (brown)
- 1 for active (green)

The state is changed during a measurement by clicking on the element with the left mouse key

- name of the output variable

Slide control



This element sets a value at an output during a measurement. The set value is shown at the top of the element digitally.

The control is altered during a measurement by clicking and holding the slider and pulling up or down.

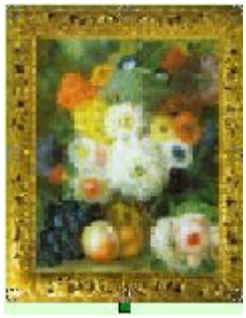
- name of the output variable,

- unit of the output variable,

- minimum and maximum values for the scale.

	Function	Parameters
tabular input	The element is used to enter values during a measurement with the keyboard. The name of the value and the unit can also be preset manually. Up to 64 channels can be defined.	- name of the element, - number of inputs, max. 64
button	The element gives a value of 1 as output so long the button is held with the left mouse key.	- name of the output quantity,

5.4 Functional elements

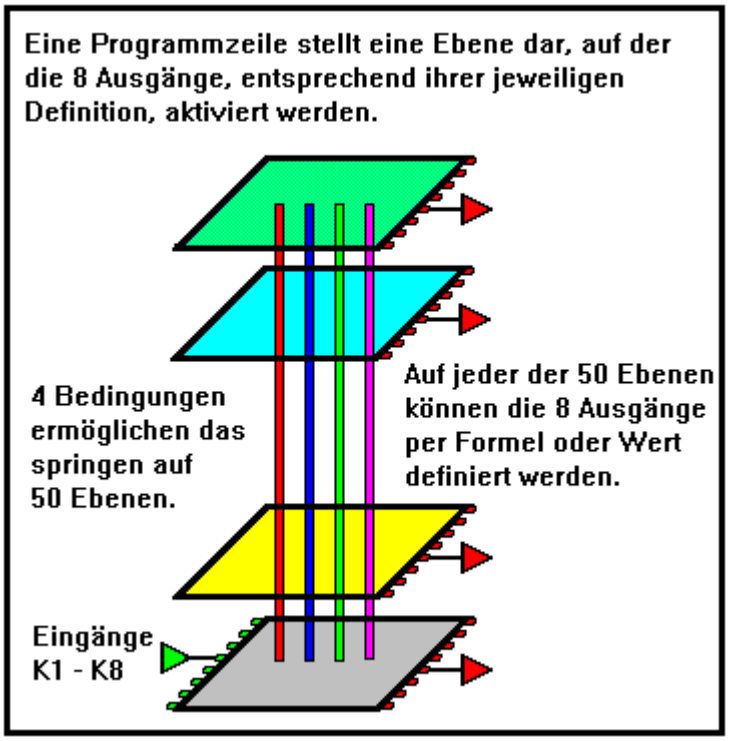
picture 	This element is used for the placement and positioning of a picture as background for the measuring system.	In tabular form: - name of picture - preserve proportions
Controller	The element functions like a PID controller, producing the regulating variable Y at the output for the control of the regulation element such as a valve.	- name of the output variable - unit of the output variable - minimum and maximum value of the output value, limited to the input signal of the regulation element, - on the left, the minus sign is the input for measured value and the plus sign is the input for preset value. - the inputs for proportional, integral and differential fraction are on the lower edge.

	Function	Parameters
relay	The element switches a data-flow line in response to an external signal. There are relays for use at the input or output. The input for the external signal is on the lower edge of the element.	- name of the element - signal input, switches the relay if a signal larger than 0.5 is received.
programmable element	This element allows a programmable controller such as an SPS or similar to be constructed. To this purpose the element contains a complete process control with 8 inputs and outputs. There is also a cascade input on the lower side and an output on the upper side. The cascade input below is for the control of a programme step. the cascade output above can be used for a display or for the input of a further control element. The process control can have up to 50 programme steps (programme lines). The element is in programme step 1 at the start of the measurement. The programme step defines what signal should appear at one of the 8 outputs and under what conditions a change to another programme step should occur.	- name of the element - minimum and maximum values as limits for the numerical range - names and units for the 8 outputs - choice of programme step In each programme step: - display of programme step number, - name of the current programme step At the left definition of the 4 conditions with: - the condition line containing the logical operators. See also Formulae. - wait time for which the condition must be true. - target step, shows the programme step to which the jump leads when the condition is true in excess of the wait time.

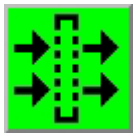
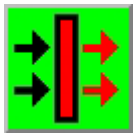
Function	Parameters
Each programme step can contain up to 4 conditions leading to a jump to another programme step. A condition consists of a formula which is true if the result rounded to a whole number is not zero, together with a delay time. If the result of the formula is true for the whole of the delay time, then the jump to the given programme step is carried out. The variables contained in the conditions must be available as inputs.	The conditions are treated as logical OR conditions. The priority is from top to bottom. On the right side is the mask for writing the commands for the outputs or the function to be carried out for the present programme step.

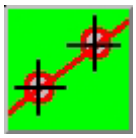
programmable element

5.4.1 Diagram of the programmable element


Eine Programmzeile stellt eine Ebene dar, auf der die 8 Ausgänge, entsprechend ihrer jeweiligen Definition, aktiviert werden.
4 Bedingungen ermöglichen das springen auf 50 Ebenen.
Auf jeder der 50 Ebenen können die 8 Ausgänge per Formel oder Wert definiert werden.
Eingänge K1 - K8

5.5 Elements for signal conversion and calculation

Function	Parameters
formula 	The element calculates the connected inputs according to a defined formula. The result is available at the output. Up to 8 input channels can be handled. **Note:** If it is necessary to calculate the value for one or more channels several times, then a programmable element can be used to define a formula for 8 outputs. In this case the symbol for the programmable element would replace the formula element.	- name of the output variable - unit of the output variable - minimum and maximum values of the output variable for limitation of the range - number of input channels - formula for the output variable, see Formulae **Note:** division by zero or by a very small value will be recognised an place zero at the output.
generator 	The element produces values at the output according to the function chosen. The following functions are available: - sine - triangular - square - saw tooth - impulse	- name of the output variable - unit of the output variable - minimum and maximum values of the curve - period
hold  value through-put  transfer of the stored values	The element stores the current value when a control signal is applied and applies this value continuously to the output. It is a hold function for a value. The element has a signal input on the lower side which controls the hold function. The second symbol shows hold active. The element can have up to 128 input and output channels	- number of inputs and outputs control input: - 0, value through-put - 1, hold of the values at the time of the change from 0 to 1. - 2, refresh of the output values according to the input values at the time of the jump from 1 to 2. The reverse jump from 2 to 1 produces no change.

	Function	Parameters
calibrator 	The element converts an input value to an output value according to a linear function. The function is defined by two points on the line. The element can have up to 128 inputs and outputs.	In tabular form: - name of the output variable - unit of the output variable - first point with the lower value for the input - first point with the lower value for the output - second point with the upper value for the input - second point with the upper value for the output
average	The element calculates an average value of the values measured at the input channel and sets the value as the output. The following averages can be calculated: - arithmetic mean, - median, - mode, - rolling average. The rolling average uses 60 values to calculate the arithmetic mean, dependent on the time interval. The rolling average covers therefore a time of averaging * 60.	- name of the output variable - unit of the output variable - if the start of averaging is set to the last full hour, then the averaging time will start from the last complete time unit i.e. hour or minute. - if the start of averaging is set for the start of the measurement then the averaging time will start from this point.

Function	Parameters

trigger

passive

active

The element triggers an action according to a function. It is used for storage of specific measuring results or to bring the programme screen to the front of the display when limits are exceeded:

- store results
- store calculated results,
- bring TRENDOWS window to the front,
- show the TRENNDOWS symbol red,
- produce a WINDOWS sound.

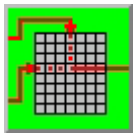
The action is started when the value of the formula exceeds 0.5.

Active status of the trigger function is shown by the second symbol.

- number of inputs, max. 8

- function as formula.

value array



The element uses the two values from the inputs to access a two-dimensional table and set the output to the value in the table. Linear interpolation is used for values that are not exactly available. Values in excess of the capabilities of the table are limited to the values at the edge of the table.

This element can also be used to define calibration curves.

Define one-dimensional arrays so that one input remains free.

- name of the output variable

- unit of the output variable

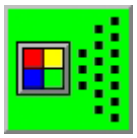
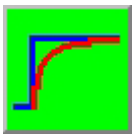
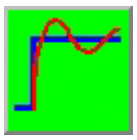
In tabular form:

- upper input defines the column

- lower input defines the row

- input of the values in the table according to the rows and column values

Note:
Store a defined array in a separate worksheet so it may be used again through the copy function.

	Function	Parameters
word to bits 	The element converts a word of 2 bytes to 16 bits	
first order delay 	The element delays the availability of the input at the output according to the first order delay function.	- name of the output variable - unit of the output value - time constant
second order delay 	The element delays the availability of the input at the output according to the second order delay function.	- name of the output variable - unit of the output variable - time constant - damping

5.5.1. Valid formulae and functions

KA1, ka1	upper and lower case valid
( )	multiple brackets allowed
^ * / mod + -	arithmetic operation
and or not <> = > < >= <=	logical operators, using the numbers 0 and 1 to represent FALSE and TRUE. Numbers between –0.5 and +0.5 are interpreted as FALSE, other numbers as TRUE.
12345.6789	any number
N	number of times the formula has been calculated. Can be used to count the measuring cycles.
V	result of the last calculation
DT	time since the last calculation, identical to the scan time of the worksheet, generally 0.01 seconds.
TI	time in seconds since 01. January 1980
KAx	current value on input No. x. The inputs are numbered from the top, starting with 1
KVx	previous value on input No. x at the time of the last calculation. Is used for differential values, since KAx – KVx is the change at the input
ABS(x)	absolute value of x.
ARCTAN(x)	arctangent of x (radians).
COS(x)	cosine of x (radians).
EXP(x)	calculates e^x.
FRAC(x)	fractional part of x.
INT(x)	integer part of x.
LN(x)	Naperian logarithm of x.
SIN(x)	sine of x (radians).
SQR(x)	square of x (x^2)

5.6 Network and communication elements

Function	Parameters
The elements "File in", "LAN client" and "OPC client" are for multiple use of TRENDOWS-Xp in a network. Multiple use requires a licence. There are reasonably priced network licences available.	

Important!

file out

The element copies the data from the connected channels to a file on a hard drive in the network. The file undergoes a periodical update every minute. It serves as a software interface between the TRENDOWS applications when no direct LAN client/server connection is possible.

Note:
This element can also be used to copy data to an external data bank. On request we will explain the construction of the file.

- for outputs, the number of channels to be carried,

- the name of the file with complete path,

- if necessary, an increased update frequency of 1 second. Standard rate is 1 minute,

Note:
The file is not created until TRENDOWS has been started.

Only one application can write the NAME.LNK file.

If different names are used, then several *.LNK files can be created.

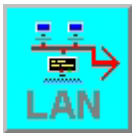
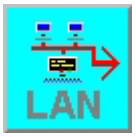
file in

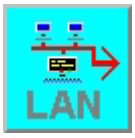
The element reads data from an external file. The element is used for data transfer with a period of 1 minute. It can also be used as interface for on-line transfer from an older TRENDOWS application. In this case the data refresh can be set to 1 second.

- for outputs, the number of channels to be carried,
- the name of the file with complete path,

- if necessary, an increased update frequency of 1 second. Standard rate is 1 minute,

Note:
The file can be found in the explorer window if it was written using a "file out" element.

	Function	Parameters
LAN server	The element transfers the data from the connected channels in the network to the TRENDOWS-Xp client applications. The data transfer follows the TCP/IP protocol at a rate of 100 Hz.	- for inputs, the number of channels connected, - the server port, standard = 7700
LAN client 	The element reads the data over the network from the LAN server. The data transfer follows the TCP/IP protocol at a rate of 100 Hz. There is no limit on the number of client elements in the application. Multiple applications are also possible. The order of the channels read is the order of the inputs from the LAN server. **Note:** TRENDOWS-Xp can be started several times on one PC with different applications with the data being transferred by the LAN server to the various LAN clients.	- for outputs, the number of channels connected, - the server port, standard = 7700 - the name of the PC or IP address with the TRENDOWS application containing the LAN server element. This information is available from the network administrator. **Note:** Access rights for the LAN server are necessary. These can be provided by the system administrator If the client PC is also a LAN server, then "localhost" will serve as PC name.
OPC client 	The element reads the data over the network from the OPC server. The OPC server is a protocol converter, allowing data communication between an SPS and WINDOWS applications. It is a software product provided by the manufacturer of the SPS. It is installed on a PC to transfer data to and from the SPS over the serial interface.	- for inputs, enter the number of variables to be sent to the OPC server, - for outputs, enter the number of variables to be read by the OPC server, - The refresh rate contains the time period for value up-date. Data communication with OPC servers is relatively slow, so data refresh should be checked if short periods are used.



Function

The OPC client element reads a set selection of variables from the OPC server. There is no limit to the number of OPC client elements that can be set and used on the display.

The OPC client is bidirectional, it can also transfer data to the OPC server.

Note:
The OPC client tests the communication with the OPC server. The OPC server will automatically close and restart if there is no change to the variables within one minute. This is shown by the red communication arrow. It is therefore useful to set one variable as "blinker".

Parameters

- the name of the PC or IP address containing the OPC server. This information is available from your network administrator.

- clicking on the button "find all OPC servers" will cause TRENDOWS-Xp to search the designated PC automatically for OPC servers. All OPC servers found will be included in a list. The desired OPC server can be chosen from this list.

- clicking on the button "test communication and read all variables" will produce a list containing all variables supplied by the OPC server. Pull the variables required by the TRENDOWS-Xp application from this list to the client list.

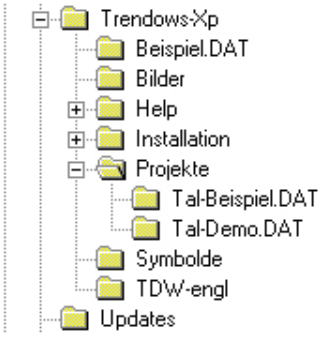
Note:
If there is no connection to the OPC server then it may help to end the application and start the OPC server again.

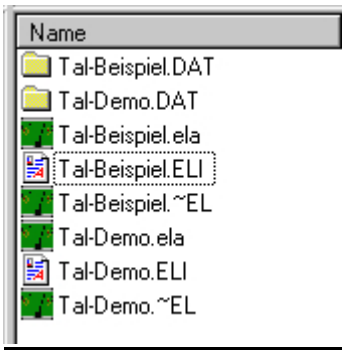
The OPC server must contain the start and access rights. The services must be started and may not be started more than once.

	Function	Parameters
web-server	The element makes the data from the channels connected available to a WEB browser. The element is bidirectional – it can transfer values to and from the browser. For this reason there is a HTML page in TRENDOWS-Xp for the data from received channels and a page for sending data to TRENDOWS-Xp. There are also four defined views in TRENDOWS-Xp which can be opened by the browser. There are spacers for the TRENDOWS-Xp channels, which can be included in a WEB page. This enables individual web pages to be designed. **Note:** Data transfer to the browser is, at present, still static. The button for refresh must be used in the browser to update the values.	- for inputs, the number of channels to be sent to the website, - for outputs, the number of channels to be read from the website, - HTTP- port, standard value = 80 - WEB password, if needed, - protocol of the logged-on users
ISDN speech output	The element transfers the data from the channels connected and up to 10 status reports as speech over the telephone system to preset numbers. It is used to inform the operating personnel. Several numbers for the status reports can be defined. The recipient of a call can cancel the call by telephone or transfer it to another connection.	ISDN speech output is only possible if the PC contains an ISDN communication card such with the CAPI 2.0 interface, such as the Fritz card. This must also be connected to the telephone system. - for status reports, the connection that should be dialled if needed. Several telephone numbers can be included. The connections must be separated with , in the list, eg, 12345, 67890, 55555, 12345. A number may be repeated in the list. - "own number" is the dial number of the PC telephone connection.

	Function	Parameters
	The element uses the channel names defined to open a speech data bank and send the recorded information over the telephone system. The information must be recorded in the data bank before use. This is carried out by telephone. The speech data bank is also available with pre-recorded standard messages. The element can also be called from an external telephone. The current values will then be given. The element has a control input on the lower side which can be used for the 10 status reports.	- the maximum connection time will limit the message if this is defined as an endless loop. - maximum number of attempts - maximum connection and ring time, - time between redials - answer every MSN - endless message allows the message to be repeated until the maximum connection time has passed. **Note:** A value -1e^9 is ignored in the speech output.
output in ASCII-format 	The element writes the values at the inputs to a hard-disk in the network and is used to make the values available to external applications. There is a control input at the lower side of the element. The values are written to file when this input changes from 0 to 1. The file is written fresh every time. It is therefore possible for outsiders to delete the file after transfer of the values.	- name of the element, - number of inputs, equal to the number of columns in a text table. - number of decimal places written, - name of the file with complete path in the network.

Path shown in Explorer





Storing data

A data directory NAME.DAT is created when the TRENDOWS-Xp worksheet is stored. This is one level lower in the hierarchy as the worksheet. Where the worksheet is stored decides therefore where the directory will be created.

The worksheet NAME.ELA is always accompanied by two other files:

- NAME.ELI
- NAME.~EL

These are to be found in the same directory as the worksheet.

The file NAME.ELI contains the time references of every start and finish of measurement. The information stored in this file is the basis for the table of all measurements during data treatment.

The file NAME.~EL is simply a copy of the worksheet.

Two data files are created every day in the data directory:

- YYYY_MM_DD.CAL
- YYYY_MM_DD.RAW

The file *.RAW contains the raw data, the data from the input elements and the raw data elements.

The file *.CAL contains the measurement data from all the other elements, which display and the data or perform calculations.

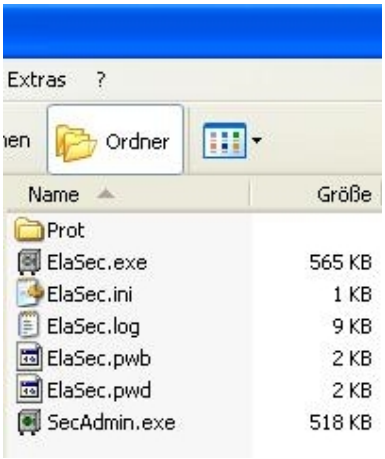
The *.CAL data is not needed if the important results are led to the raw data element. This saves space when the data must be stored on a floppy or transmitted by wireless. Calculations performed with raw data are described in Chapter 4 "Analysis" on page 1.

Copying the data elsewhere

Copying the measuring data elsewhere requires that at least the worksheet NAME.ELA and the directory NAME.DAT with the files *.RAW are copied to the new position. The data directory must lie one level lower at the new position (as in the previous position). It is useful to also copy the *.CAL files, since then the results of all signal processing and display elements are available.

If the file NAME.ELI is not stored in the same directory as the worksheet NAME.ELA, then the list of events will remain empty. The measuring data can nevertheless be used by setting the correct timing.

Path display in Explorer



7.0 General

The audit trail in conjunction with the electronic signature of documents was developed for Server/Client systems in accordance with the requirements of the US Food and Drug Administration 21 CFR Part 11. Conformity of the software TRENDOWS-Xp to these requirements has been checked and certified by an independent laboratory.

Certificate of conformity to FDA 21 CFR Part 11

The protected audit trail can also be used generally when the following requirements are present:

- Check on the client use of the system,
- Protocol of user input,
- Cancelling and recording of alarms,
- Password administration with control of rights and validity
- Protocol of the TRENDOWS-Xp results with electronic signature
- Protocol for all parts of the audit trail with filters for alarms, cancellations, user input etc.

Use of these options requires a separate licence and code to activate them. The security server ELASEC and password administration SECADMIN must also be installed.

The security server takes all client input and stores it in an internal protocol file after 128 bit encryption. For report preparation the security server supplies all messages for the required time period and according to the filter applied.

Important!
The data from the protocol file can only be read with TRENDOWS-Xp due to the encrytion.

7.1 Installing the security server

Installation of the security server requires administrator privileges and must be carried out in a protected directory

Security server and password administration are delivered as a ZIP file. The Zip file should be extracted into a temporary directory. The file SECINST.BAT in the temporary directory should then be run.

The programmes will be copied into the directory c:\programs\elasec and the security server operation will be started.
The security server will require the TRENDOWS-Xp applications to run the "Alarm Server" and "Alarm Client".

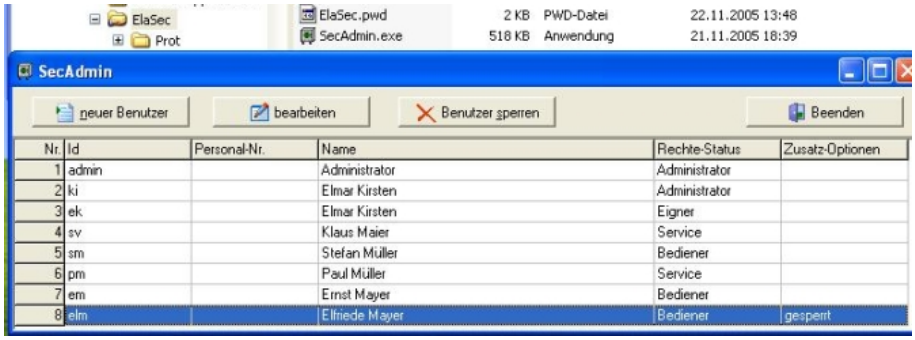
The user must be defined in the password administration when the programme is run for the first time.

7.2 Password Administration

Password administration is started with the programme "SecAdmin". The IP address of the PC should be known. After the initiation the password request with administrator privileges for TRENDOWS-Xp. For the first use the basis setting is:

Administrator = admin
Password = start1

This will open the input mask for listing the users.



There are four different user levels and user privileges:

- Administrator level with password administration privileges,
- Owner privileges as defined in TRENDOWS-Xp,
- Service privileges as defined in TRENDOWS-Xp,
- User privileges as defined in TRENDOWS-Xp.

There is also the level of "everybody" with no privileges.

The ID column is used for a short-form name. The short –form name, personnel number and password are checked for unique character.

Passwords have an expiry date. The validity time is stored in the file ELASEC.INI.

- NdayPwdChange=abc, abc = Number of days, after which the user is asked for a new password.

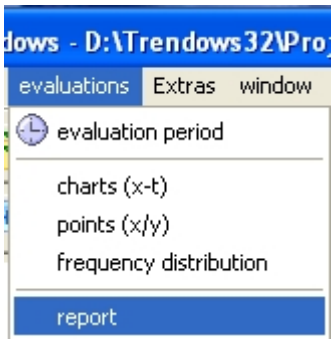
[SPAM?]: Warnung, Passwort-Hacking -...
Datei Bearbeiten Ansicht Einfügen Format Extras Aktionen
Antworten Allen antworten
Von: elasec [elmar@kirsten-controls.de] Gesendet: Mo 21.11.2005 11:31
An: kirsten@messsoftware.com
Cc:
Betreff: [SPAM?]: Warnung, Passwort-Hacking
Zu viele falsche Passwort-Eingaben: sm

Mail message

- NdayPwdlock=knm, knm =Number of days, after which the user is locked-out. A new password is required to re-open the account.

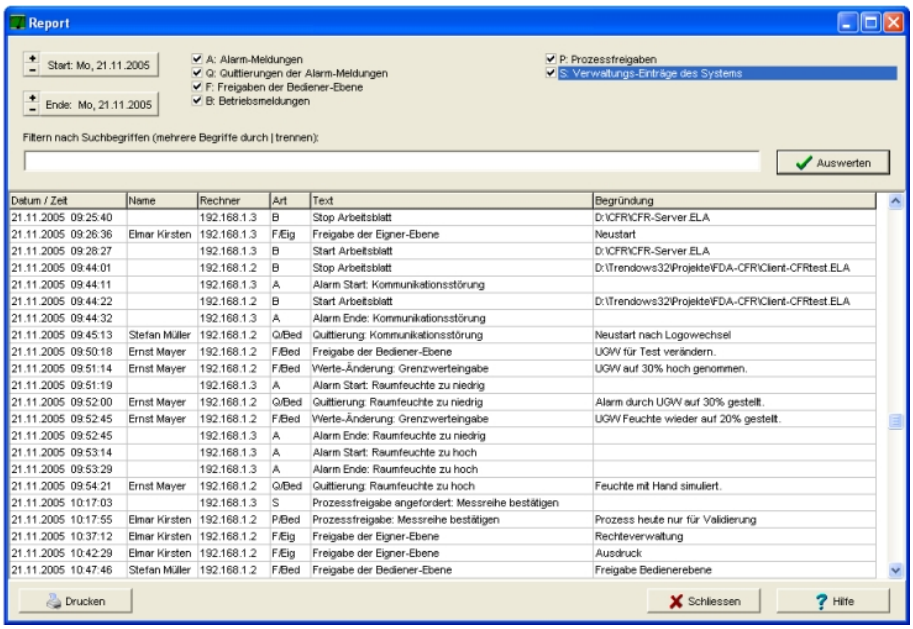
An email will be sent to the registered administrator after three attempts to log on without correct password. The parameters for the mail server, the address of the email recipient and the message text are also stored in the file ELASEC.INI.

[Mail]
SmtpServer="Server address"
MailUserId="Mail account"
MailUserPwd=Password for mail account
MailFromAddress="Mail address of sender"
MailFromName="Name of sender"
MailToWarn="Mail address of recipient"
MailHeaderWarn="Warning text"



7.3 Report and Protocol Viewing

All the data in the audit trail can be seen under Results – Report.


Report
Start: Mo, 21.11.2005
Ende: Mo, 21.11.2005
A: Alarm-Meldungen
Q: Quittierungen der Alarm-Meldungen
F: Freigaben der Bediener-Ebene
B: Betriebsmeldungen
P: Prozessfreigaben
S: Verwaltungs-Einträge des Systems
Filtern nach Suchbegriffen (mehrere Begriffe durch | trennen):
Auswerten
Datum / Zeit | Name | Rechner | Art | Text | Begründung
21.11.2005 09:25:40 | | 192.168.1.3 | B | Stop Arbeitsblatt | D:\CFR\CFR-Server.ELA
21.11.2005 09:26:36 | Elmar Kirsten | 192.168.1.3 | F/Eig | Freigabe der Eigner-Ebene | Neustart
21.11.2005 09:28:27 | | 192.168.1.3 | B | Start Arbeitsblatt | D:\CFR\CFR-Server.ELA
21.11.2005 09:44:01 | | 192.168.1.2 | B | Stop Arbeitsblatt | D:\Trendows32\Projekte\FDA-CFR\Client-CFRtest.ELA
21.11.2005 09:44:11 | | 192.168.1.3 | A | Alarm Start: Kommunikationsstörung |
21.11.2005 09:44:22 | | 192.168.1.2 | B | Start Arbeitsblatt | D:\Trendows32\Projekte\FDA-CFR\Client-CFRtest.ELA
21.11.2005 09:44:32 | | 192.168.1.3 | A | Alarm Ende: Kommunikationsstörung |
21.11.2005 09:45:13 | Stefan Müller | 192.168.1.2 | Q/Bed | Quittierung: Kommunikationsstörung | Neustart nach Logowechsel
21.11.2005 09:50:18 | Ernst Mayer | 192.168.1.2 | F/Bed | Freigabe der Bediener-Ebene | UGW für Test verändern.
21.11.2005 09:51:14 | Ernst Mayer | 192.168.1.2 | F/Bed | Werte-Änderung: Grenzwerteingabe | UGW auf 30% hoch genommen.
21.11.2005 09:51:19 | | 192.168.1.3 | A | Alarm Start: Raumfeuchte zu niedrig |
21.11.2005 09:52:00 | Ernst Mayer | 192.168.1.2 | Q/Bed | Quittierung: Raumfeuchte zu niedrig | Alarm durch UGW auf 30% gestellt.
21.11.2005 09:52:45 | Ernst Mayer | 192.168.1.2 | F/Bed | Werte-Änderung: Grenzwerteingabe | UGW Feuchte wieder auf 20% gestellt.
21.11.2005 09:52:45 | | 192.168.1.3 | A | Alarm Ende: Raumfeuchte zu niedrig |
21.11.2005 09:53:14 | | 192.168.1.3 | A | Alarm Start: Raumfeuchte zu hoch |
21.11.2005 09:53:29 | | 192.168.1.3 | A | Alarm Ende: Raumfeuchte zu hoch |
21.11.2005 09:54:21 | Ernst Mayer | 192.168.1.2 | Q/Bed | Quittierung: Raumfeuchte zu hoch | Feuchte mit Hand simuliert.
21.11.2005 10:17:03 | | 192.168.1.3 | S | Prozessfreigabe angefordert: Messreihe bestätigen |
21.11.2005 10:17:55 | Elmar Kirsten | 192.168.1.2 | P/Bed | Prozessfreigabe: Messreihe bestätigen | Prozess heute nur für Validierung
21.11.2005 10:37:12 | Elmar Kirsten | 192.168.1.2 | F/Eig | Freigabe der Eigner-Ebene | Rechteverwaltung
21.11.2005 10:42:29 | Elmar Kirsten | 192.168.1.2 | F/Eig | Freigabe der Eigner-Ebene | Ausdruck
21.11.2005 10:47:46 | Stefan Müller | 192.168.1.2 | F/Bed | Freigabe der Bediener-Ebene | Freigabe Bedienerebene
Drucken
Schliessen
Hilfe

7.3.1 Construction of the audit trail

The audit trail can be selected according to the "type" of message.

A: Alarms are all activated messages from the alarm server which do not start with #.

Q: Cancellations over the alarm server.

F: Assignment of the data privileges as defined in TRENDOWS-Xp.

B: Messages from the TRENDOWS-Xp work sheets, start of run and stop.

P: Process approvals are confirmations for an existing process. They must be carried out by the person responsible. The name of the user will be treated as an electronic signature and included in the protocols. The process confirmation must be stored with a "#" as first character on the alarm server.

S: Administration notes, such as password changes and initiation of new work sheets, etc.

The activation of multiple filter options allows the view of several groups of messages, for example, A and Q for alarm messages and cancellations.

In the column "Type" the letter designating the type of message is in the first position. Separated by a "/" are the registered data privileges.

In the text column next to A, Q and P are the predefined text messages from the alarm server.

Reasons contains the manually added comments.

The audit trail may also be printed, see

Alarm_protocol.pdf.

For company name and company logo in the protocol there are two pictures in *.jpg format available

- Reportlogo1p.jpg 12 x 2 cm for DIN-A4 vertical
- Reportlogo1l.jpg 21 x 2 cm for DIN-A4 horizontal
- Reportlogo2.jpg 5 x 4 cm for both formats, positioned right

Manual additions before printing

7.3.2 Graphics and Value Protocol

The calculation functions in TRENDOWS-Xp can be printed as protocol by pressing the "print" button. A mask will open asking for title, relevant work area and any comments. The result, for instance of a process curve, the document Graphic_protocol.pdf.

The area for calculation is defined by the choice of time in the TRENDOWS-Xp calculation mode.

KIRSTEN CONTROLSYSTEMS GMBH

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Trendows-Xp Protokollausgabe

Protokolltitel: Alarmmeldungen
Arbeitsbereich: Validierung Trendows-Xp
Datenquelle: \\Uschi\lwd\CFR\CFR-Server.ELA
Auswerteobjekt: Audittrail, Filter: A,Q

Auswertebereich: 21.11.2005 - 21.11.2005

Datum / Zeit	Name	Rechner	Art	Text	Begründung
21.11.2005 08:47:24		192.168.1.3	A	Alarm Start: Kommunikationsstörung	
21.11.2005 08:47:29		192.168.1.3	A	Alarm Start: Raumtemperatur zu hoch	
21.11.2005 08:47:29		192.168.1.3	A	Alarm Start: Raumfeuchte zu hoch	
21.11.2005 08:47:35		192.168.1.3	A	Alarm Ende: Kommunikationsstörung	
21.11.2005 08:47:45		192.168.1.3	A	Alarm Start: Kommunikationsstörung	
21.11.2005 08:49:55		192.168.1.3	A	Alarm Start: Raumtemperatur zu hoch	
21.11.2005 08:49:55		192.168.1.3	A	Alarm Start: Raumfeuchte zu hoch	
21.11.2005 08:50:00		192.168.1.3	A	Alarm Start: Kommunikationsstörung	
21.11.2005 09:14:14		192.168.1.3	A	Alarm Ende: Kommunikationsstörung	
21.11.2005 09:19:40		192.168.1.3	A	Alarm Start: Raumtemperatur zu hoch	
21.11.2005 09:19:40		192.168.1.3	A	Alarm Start: Raumfeuchte zu hoch	
21.11.2005 09:21:03		192.168.1.3	A	Alarm Start: Raumtemperatur zu hoch	
21.11.2005 09:21:03		192.168.1.3	A	Alarm Start: Raumfeuchte zu hoch	
21.11.2005 09:22:41	Paul Müller	192.168.1.2	Q/Bed	Quittierung: Raumtemperatur zu hoch	Datenflusslinien auf Steuerungselement nachgetragen
21.11.2005 09:22:52	Paul Müller	192.168.1.2	Q/Bed	Quittierung: Raumfeuchte zu hoch	Datenflusslinien auf Steuerungselement nachgetragen
21.11.2005 09:24:19		192.168.1.3	A	Alarm Start: Raumtemperatur zu hoch	
21.11.2005 09:24:19		192.168.1.3	A	Alarm Start: Raumfeuchte zu hoch	
21.11.2005 09:25:39		192.168.1.3	A	Alarm Start: Raumtemperatur zu hoch	
21.11.2005 09:25:39		192.168.1.3	A	Alarm Start: Raumfeuchte zu hoch	
21.11.2005 09:44:11		192.168.1.3	A	Alarm Start: Kommunikationsstörung	
21.11.2005 09:44:32		192.168.1.3	A	Alarm Ende: Kommunikationsstörung	
21.11.2005 09:45:13	Stefan Müller	192.168.1.2	Q/Bed	Quittierung: Kommunikationsstörung	Neustart nach Logowechsel
21.11.2005 09:51:19		192.168.1.3	A	Alarm Start: Raumfeuchte zu niedrig	
21.11.2005 09:52:00	Ernst Mayer	192.168.1.2	Q/Bed	Quittierung: Raumfeuchte zu niedrig	Alarm durch UGW auf 30% gestellt.
21.11.2005 09:52:45		192.168.1.3	A	Alarm Ende: Raumfeuchte zu niedrig	
21.11.2005 09:53:14		192.168.1.3	A	Alarm Start: Raumfeuchte zu hoch	
21.11.2005 09:53:29		192.168.1.3	A	Alarm Ende: Raumfeuchte zu hoch	
21.11.2005 09:54:21	Ernst Mayer	192.168.1.2	Q/Bed	Quittierung: Raumfeuchte zu hoch	Feuchte mit Hand simuliert.
21.11.2005 12:01:46		192.168.1.3	A	Alarm Start: Raumfeuchte zu hoch	
21.11.2005 12:01:56		192.168.1.3	A	Alarm Ende: Raumfeuchte zu hoch	
21.11.2005 12:04:28		192.168.1.3	A	Alarm Start: Raumfeuchte zu niedrig	

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Trendows-Xp Protokollausgabe

Protokolltitel: Alarmmeldungen
Arbeitsbereich: Validierung Trendows-Xp

Datum / Zeit	Name	Rechner	Art	Text	Begründung
21.11.2005 12:08:03		192.168.1.3	A	Alarm Ende: Raumfeuchte zu niedrig	

Kommentar:
keine, siehe auch Grafikprotokoll

Für den Prozess verantwortliche Personen:

21.11.2005 10:17:55	Elmar Kirsten	192.168.1.2	P/Bed	Prozessfreigabe: Messreihe bestätigen	Prozess heute nur für Validierung

KIRSTEN CONTROLSYSTEMS GMBH

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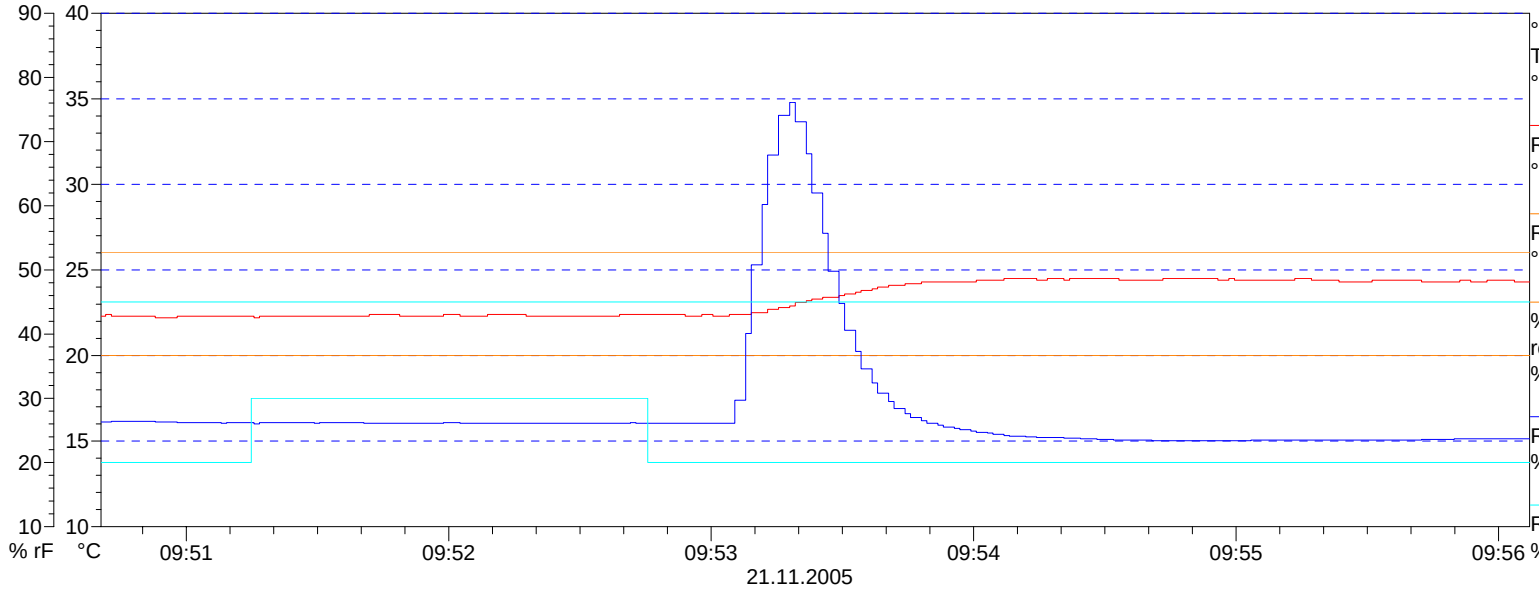
Trendows-Xp Protokollausgabe

Protokolltitel: Feuchtemanipulation
Arbeitsbereich: Validierung Trendows-Xp
Datenquelle: \\Uschi\lwd\CFR\CFR-Server.ELA
Auswerteobjekt: Tabelle Raumklima, Rohwerte

Auswertebereich: 21.11.2005 09:28:27 - 21.11.2005 10:58:22

Tabelle Raumklima

Raumklima
Hygrotest 650 PHT



°C:		
Temperatur	> 22.200	
°C	Ø 23.342	
	< 24.500	
Raumtemperatur o. GW	> 26.000	
°C	Ø 26.000	
	< 26.000	
Raumtemperatur u. GW	> 20.000	
°C	Ø 20.000	
	< 20.000	
% rF:		
rel. Feuchte	> 23.400	
%	Ø 27.933	
	< 76.100	
Raumfeuchte o. GW	> 45.000	
%	Ø 45.000	
	< 45.000	
Raumfeuchte u. GW	> 20.000	
%	Ø 22.776	
	< 30.000	

Kommentar:
Alarmierung bei Grenzwertüber- und Unterschreitung

Für den Prozess verantwortliche Personen:
21.11.2005 10:17:55 Elmar Kirsten 192.168.1.2 P/Bed Prozessfreigabe: Messreihe bestätigen Prozess heute nur für Validierung

testo industrial services
calibration validation training

CONFORMITY CERTIFICATE

FDA 21 CFR Part 11

for software

TRENDOWS-Xp

Client: **Kirsten Controlsystems GmbH, Ellwanger Straße 45, 71732 Tamm**

Scope of test:

Conformity was tested using a pre-approved validation plan (Document Number 8091 Version 1, Firma Kirsten, FDA 21 CFR Part 11 Conformity, Approval date November 14, 2005). In addition to general requirements made on the software, requirements in accordance with the FDA 21 CFR Part 11, Electronic Records and Electronic Signatures were also taken into consideration.

Test object:

Test system consisting of:
- Server/Client
- Several emitters/Bus modules
- Ethernet adapter/Interface converter/WLAN Router
- Software Trendows-Xp Version 3.3.0.1

Refer to Chapter 2 "Objective and Scope" in the validation plan for an exact description of the test object.

Test result:

The requirements specified in the validation plan were met without exception. The separate test points and the results achieved are included in the validation report (Document Number 8091 Version 1, Firma Kirsten, FDA 21 CFR Part 11 Conformity, Approval date December 02, 2005).

This conformity certificate applies only to the test object described above and includes the software version used.

Kirchzarten, December 02, 2005

ppa. Thomas Richter
-Head Onsite Service-

i. A. Anette Fröhlich
-Onsite Technician Baden-Württemberg-

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